

# Safety Test Power Lab



TECHNISCHE  
UNIVERSITÄT  
DARMSTADT



Institut für  
Elektrische  
Energiewandlung

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Winter semester \_\_\_\_\_ / Summer semester \_\_\_\_\_

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Name: \_\_\_\_\_

Prenome: \_\_\_\_\_

Matriculation number: \_\_\_\_\_

Laboratory:  ETP  ATP  MEC

Date: \_\_\_\_\_

Room: \_\_\_\_\_

Time \_\_\_\_\_

Duration: \_\_\_\_\_

For a question more than one answer is possible. The questions 1-8 must be answered correctly!

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1. At the adjacent test stand a test participant falls to the ground. Are the following answers on first aid correct? Mark the correct ones!

- Execute first aid
- Get help
- Let sign the attestation card
- I go to the person and check whether he is conscious
- I leave the room

2. What is generally to be done with your hair during the work with rotating machines and generally throughout the laboratories work?

- Long hair can be worn open
- Long hair must be tied together to avoid contact with rotating elements

3. Which emergency number do you have to dial, if an accident with injury happens?

- 110
- 112
- 113

4. You have to change the wiring during the lab afternoon. What do you have to keep in mind?

- Before repowering the bench, one has to obtain the permission of the supervisor
- All switches have to be shut off. Voltage is zero
- Wiring is done by your own plan without asking the supervisor
- There are no grounding rules to be kept in mind

5. When is it necessary to press the emergency-off button ?

- Turn-off of the test bench
- Upcoming sudden danger
- Accident

6. What is true?

- There are no further hazards, after the emergency-off switch has been pressed
- Pressing of the emergency-off switch interrupts the power supply in the lab hall
- Machines and parts of the equipment may be still energized after pressing the emergency-off switch

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7. What do you have to do, after you received an electrical shock?

- Washing the hands
- Go home
- Visit a doctor
- Use the emergency shower
- Report the accident to the supervisor

8. A Person can no longer let go live components due to muscle cramping, caused by an electrical accident. How do you react first? (One answer)

- You press the emergency-stop switch
- You try to separate him from the live parts with the foot
- First, you call the emergency phone number
- You call for help by shouting
- You avoid risks and leave the room

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For a question more than one answer is possible. For question 9 the order of the given answers is to be marked by using the numbers 1...5. The total number of wrong marked answers is counted.

9. Bring the five safety rules in the right order!

- Cover, partition or screen of adjacent line sections
- Ground and short circuit phases
- Check that lines and equipment dead
- Lock against reclosure
- Switch off

10. An accident with injury of persons; which informations do you have to tell the staff of the headquarters of the emergency services?

- Where is the accident?
- What is your personal address?
- How many persons are injured?
- What kind of injuries do the people have?
- Who is the calling person?
- What happened?
- When did the accident happen?
- How many persons are unharmed?
- Wait for emergency service questions!

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11. What do you have keep in mind before starting each lab afternoon?

- Prepare the measurement tables
- Reading and understanding of test instructions
- Create your test report
- Working through the theory part of the lab textbook of the respective lab afternoon

12. What is in the laboratories not allowed?

- Talking
- Drink and eat
- Wearing closed shoes
- Using your mobile phone
- Labelling of items in the lab
- Dropping your bags in the lab, as you like it
- Wearing tight clothing
- Leaving the lab hall, before the lab afternoon ends

13. At the beginning of the lab you have to wire the test bench! For what do you have to pay attention, when choosing the cables?

- Choice of a suitable cable cross section
- Choose very long cables
- Choose always the same color of the cable for a certain phase (e.g. phase U), so that cabling errors are more easily recognized

14. Which voltages are used during the tests?

- |                          |      |             |       |
|--------------------------|------|-------------|-------|
| <input type="checkbox"/> | 1~AC | 110 V       | 50 Hz |
| <input type="checkbox"/> | DC   | up to 500 V |       |
| <input type="checkbox"/> | 3~AC | 400 V       | 50 Hz |
| <input type="checkbox"/> | 3~AC | 460 V       | 60 Hz |
| <input type="checkbox"/> | 1~AC | 180 kV      | 50Hz  |
| <input type="checkbox"/> | 1~AC | 750 kV      | 50 Hz |

15. What should be noted, when using measurement instruments?

- Choose the appropriate measuring range
- Oversizing of the measuring range to avoid damage of the device
- Switching on the supply voltage of the meter before measuring
- Note the expiration date of the device
- Note the expiration date of the calibration sign
- Note the suitability of the measurement device for DC or AC operation
- Take care of the limits of the measuring range
- Arrange the measurement devices by size

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16. Which dangers may possible occur at the test benches during your laboratory?

- Risk of burning by over-heated components
- Ionizing radiation
- Rotating parts
- Touchable elements at "live" voltage
- Dizziness danger from electromagnetic radiation
- Danger by inattentive and careless lab participants
- Corrosive chemicals
- High energy laser light
- Bacterial infection
- Capacitors still loaded after switching off

17. Which factors are crucial for the total body resistance?

- Skin condition
- Blood pressure
- Body mass
- Transpiration
- Hair color
- Insulating footwear
- Protective gloves
- Age of the person

18. What are the consequences of an electrical accident?

- Increased sight
- Cramping
- Heart ventricular fibrillation
- Increase of body mass
- Increase of body length
- Respiratory failure
- Skin injuring by burning

19. Above which amperage is an unhand from energized elements no longer possible?  
(Loslassgrenze, unclasp limit) (one correct answer)

- 0.5 mA
- 10-15 mA
- 15-25 mA
- 25-50 mA
- >50 mA

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20. Is the electrical current path through the body during an electrical accident important for the seriousness of being hurt?

- Yes  
 No

21. You discover a defect in a cable insulation. How do you behave?

- You use the cable  
 You keep the cable with you as a reminder for future repair  
 You report the defect to the supervisor  
 You put back the cable to the cable rig  
 You repair the cable  
 You discuss the incident with your friends

22. You and your group have completed the experiment. What is necessary to obey during the unwiring of the test rig?

- You go home  
 You will start immediately with the dismantling of the test rig  
 You let first sign the attestation card by the supervisor  
 You wait for further instruction by the supervisor  
 You leave the lab hall

23. How do you handle measurement devices and cables?

- The measurement devices remain at the test bench  
 The cables will be put back in a disorderly way  
 Cables are sorted by length and color at the cable rack

24. During the experiment you have cut yourself by accident slightly on your hand, leaving a small bleeding wound. How do you act?

- Show your hand to the supervisor, so that he can do the first aid  
 You press the emergency-stop switch  
 A small wound is not critical, and you just do nothing further on that  
 You go home  
 You get your attestation card signed

25. Which of the following parameters are decisive for the current flow of an electrical accident?

- Voltage frequency and magnitude  
 Air density  
 Body internal resistance  
 Leaky cable insulation